



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/886,593	06/21/2001	Leonard E. Mess	4587US (00-0838)	6330

24247 7590 06/20/2003

TRASK BRITT
P.O. BOX 2550
SALT LAKE CITY, UT 84110

EXAMINER

ERDEM, FAZLI

ART UNIT

PAPER NUMBER

2826

DATE MAILED: 06/20/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/886,593

Applicant(s)

MESS ET AL.

Examiner

Fazli Erdem

Art Unit

2826

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 March 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-94 is/are pending in the application.
- 4a) Of the above claim(s) See Continuation Sheet is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,5,17,20,22,23,25,26,35,38,40,45,46,48,63-66 and 80 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

NATHAN J. FLYNN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

Continuation of Disposition of Claims: Claims withdrawn from consideration are 3,6-16,18,19,21,24,27-34,36,37,39,41-44,47,49-62,67-79 and 81-94.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1, 2, 4, 5, 17, 20, 22, 23, 25, 26, 35, 38, 40, 45, 46, 48, 63-66 and 80 rejected under 35 U.S.C. 103(a) as being unpatentable over Khandros et al. (5,998,864) in view of Burns (5,585,668) further in view of Haba et al. (6,376,904) further in view of Fogal et al. (6,051,886) further in view of Knopf (5,585,675).

Regarding Claims 1, 2, 4, 5, 17, 20, 22, 23, 25, 26, 35, 38, 40, 45, 46, 48, 63-66 and 80, Khandros disclose a stacking semiconductor devices where high density packaging of semiconductor devices on an interconnection substrate is achieved by stacking bare semiconductor devices atop one another so that an edge portion of a semiconductor device extends beyond the semiconductor device that it is stacked atop. Elongate interconnection elements extend from the bottommost one of the semiconductor devices, and from the exposed edge portions of the semiconductor device. Free-ends of the elongate interconnection elements make electrical contact with terminals of an interconnection substrate. The elongate interconnection elements extending from each of the semiconductor devices are sized so as to reach the terminals of the interconnection substrate, which may be plated through holes. The elongate interconnection elements are suitably resilient contact structures and may be composite interconnection elements comprising a relatively soft core and a relatively hard overcoat.

Khandros et al. fail to disclose an offset structure during stacking. However, Burns discloses an integrated circuit package with overlapped die on a common lead frame where the required offset structure is disclosed. Khandros et al. and Burns combination fail to disclose the required offset, offset relative to the die and offset relative to pad structures. However, Haba et al. disclose a redistributed bond pads in stacked integrated circuit die package where the required offset structure is disclosed. Furthermore, Fogal et al. disclose an angularly offset stacked die multichip device and method of manufacture where the required offset with relative to the die structure is disclosed. Finally, Knopf discloses a semiconductor die packaging tub having angularly offset pad-to-pad via structure configured to allow three-dimensional stacking and electrical interconnections among multiple identical tubs where the required offset with relative to bond structure is disclosed.

It would have been obvious to one of having ordinary skill in the art at the time the invention was made to include the offset structure, offset with relative to die, and offset with relative to bond pad structures in Khandros et al. and Burns combination as taught by Haba et al., Fogal et al., and Knopf respectively in order to have a semiconductor packaging structure with higher density.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fazli Erdem whose telephone number is (703) 305-3868. The examiner can normally be reached on M - F 8:00 - 5:00.

Art Unit: 2826

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (703) 308-6601. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

FE

June 14, 2003